

☐ 5. Document ID: US 6322794 B1

L2: Entry 5 of 13

File: USPT

Nov 27, 2001

US-PAT-NO: 6322794

DOCUMENT-IDENTIFIER: US 6322794 B1

TITLE: Seroreactive epitopes on proteins of human papillomavirus (HPV) 18

DATE-ISSUED: November 27, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bleul; Conrad	Heidelberg			DE
<u>Gissmann; Lutz</u>	Wiesloch			DE
Muller; Martin	Heidelberg			DE

US-CL-CURRENT: 424/204.1; 424/139.1, 424/141.1, 424/147.1, 424/186.1, 435/339,  
435/5, 530/388.3, 530/389.4

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KWIC	Draw D
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☐ 6. Document ID: US 6228368 B1

L2: Entry 6 of 13

File: USPT

May 8, 2001

US-PAT-NO: 6228368

DOCUMENT-IDENTIFIER: US 6228368 B1

TITLE: Papilloma virus capsomere formulations and method of use

DATE-ISSUED: May 8, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
<u>Gissmann; Lutz</u>	Wiesloch			DE
Muller; Martin	Chicago	IL		

US-CL-CURRENT: 424/204.1; 424/186.1, 424/192.1, 435/235.1, 435/320.1, 435/69.1,  
435/69.3, 536/23.4, 536/23.72

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KWIC	Draw D
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☐ 7. Document ID: US 6221577 B1

L2: Entry 7 of 13

File: USPT

Apr 24, 2001

US-PAT-NO: 6221577

DOCUMENT-IDENTIFIER: US 6221577 B1

**\*\* See image for Certificate of Correction \*\***

TITLE: Seroreactive regions on HPV 16-proteins E1 and E2

DATE-ISSUED: April 24, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Muller; Martin	Heidelberg			DE
Gissmann; Lutz	Wiesloch			DE

US-CL-CURRENT: 435/5; 424/185.1, 424/186.1, 424/204.1, 435/7.94, 435/7.95, 530/300,  
530/325, 530/326, 530/327, 536/23.72 , 930/220

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 8. Document ID: US 6066324 A

L2: Entry 8 of 13

File: USPT

May 23, 2000

US-PAT-NO: 6066324

DOCUMENT-IDENTIFIER: US 6066324 A

TITLE: Carboxyl terminal of papilloma virus L1 region is not required for formation of virus-like particles

DATE-ISSUED: May 23, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
<u>Gissmann; Lutz</u>	Willowbrook	IL		
Zhou; Jian	Willowbrook	IL		
Muller; Martin	Chicago	IL		
Painstil; Jeanette	Westchester	IL		

US-CL-CURRENT: 424/204.1; 424/184.1, 424/186.1, 424/199.1, 424/205.1, 435/69.1,  
435/69.3, 536/23.72

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw D
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☐ 9. Document ID: US 5753233 A

L2: Entry 9 of 13

File: USPT

May 19, 1998

US-PAT-NO: 5753233

DOCUMENT-IDENTIFIER: US 5753233 A

TITLE: Seroreactive epitopes on proteins of human papilloma-virus (HPV) 18

DATE-ISSUED: May 19, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Bleul; Conrad	Heidelberg			DE
<u>Gissmann; Lutz</u>	Wiesloch			DE
Muller; Martin	Heidelberg			DE

US-CL-CURRENT: 424/204.1; 424/184.1, 435/5, 435/7.1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. D
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☐ 10. Document ID: US 5665533 A

L2: Entry 10 of 13

File: USPT

Sep 9, 1997

US-PAT-NO: 5665533

DOCUMENT-IDENTIFIER: US 5665533 A

TITLE: Skin test to human papillomavirus type 16

DATE-ISSUED: September 9, 1997

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hopfl; Reinhard	Innsbruck			AT
Jochmus-Kudielka; Ingrid	Washington	DC		
<u>Gissmann; Lutz</u>	Wiesloch			DE

US-CL-CURRENT: 435/5; 435/235.1, 436/63, 530/350, 530/403, 536/23.72

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. D
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13

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End of Result Set



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L1: Entry 4 of 4

File: USPT

May 8, 2001

US-PAT-NO: 6228368DOCUMENT-IDENTIFIER: US 6228368 B1

TITLE: Papilloma virus capsomere formulations and method of use

DATE-ISSUED: May 8, 2001

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Gissmann; Lutz	Wiesloch			DE
Muller; Martin	Chicago	IL		

US-CL-CURRENT: 424/204.1; 424/186.1, 424/192.1, 435/235.1, 435/320.1, 435/69.1,  
435/69.3, 536/23.4, 536/23.72

## CLAIMS:

What is claimed is:

1. An antigenic formulation comprising a human papilloma virus capsomere, said capsomere comprising a fusion protein comprising a human papilloma virus L1 protein adjacent amino acid residues from a second protein, said L1 protein and said amino acids from said second protein positioned to inhibit virus-like particle formation, said formulation evoking an immune response which neutralizes human papilloma virus virions.
2. An antigenic formulation comprising a human papilloma virus capsomere, said capsomere comprising a truncated human papilloma virus L1 protein having a deletion of one or more amino acid residues necessary for formation of a virus-like particle, said formulation evoking an immune response which neutralizes human papilloma virus virions.
3. The antigenic formulation of claim 2 wherein said capsomere comprises a fusion protein comprising a truncated human papilloma virus L1 protein adjacent amino acid residues from a second protein.
4. The antigenic formulation of any one of claims 1, 2, or 3 protein is encoded in the genome of a human papilloma virus selected from the group consisting of HPV6, HPV11, HPV16, HPV18, HPV33, HPV35, and HPV45.
5. The antigenic formulation of claim 4 wherein the papilloma virus is HPV16.
6. The antigenic formulation of any one of claims 2, 3, or 5 wherein carboxy terminal amino acid residues are deleted from the L1 protein.
7. The antigenic formulation of claim 6 wherein 1 to 34 carboxy terminal amino

acid residues are deleted from the L1 protein.

8. The antigenic formulation of claim 7 wherein 34 carboxy terminal amino acid residues are deleted from the L1 protein.

9. The antigenic formulation of any one of claims 2, 3, or 5 wherein amino terminal amino acid residues are deleted from the L1 protein.

10. The antigenic formulation of any one of claims 2, 3, or 5 wherein internal amino acid residues are deleted from the L1 protein.

11. The antigenic formulation of claim 10 wherein the amino acid residues deleted from the L1 protein comprise a nuclear localization signal.

12. The antigenic formulation of claims 2 or 3 wherein the amino acids residues from the second protein are derived from an HPV protein.

13. The antigenic formulation of claim 12 wherein the HPV protein is an early HPV protein.

14. The antigenic formulation of claim 12 wherein the early HPV protein is selected from the group consisting of E1, E2, E3, E4, E5, E6, and E7.

15. A method of treating an individual infected with an HPV virus comprising the step of administering to a patient in need thereof an amount of the antigenic formulation of claims 1, 2, 3, 5, 7, 8, 11, 13, or 14 effective to reduce the level of HPV infection.

16. A method for preventing papilloma virus infection comprising the step of administering to an individual susceptible thereto an amount of the antigenic formulation of claims 1, 2, 3, 5, 7, 8, 11, 13, or 14 effective to inhibit HPV infection.

[Previous Doc](#)

[Next Doc](#)

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## Hit List

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Search Results - Record(s) 1 through 10 of 18 returned.

☐ 1. Document ID: US 6908613 B2

L4: Entry 1 of 18

File: USPT

Jun 21, 2005

US-PAT-NO: 6908613

DOCUMENT-IDENTIFIER: US 6908613 B2

TITLE: Chimeric human papillomavirus (HPV) L1 molecules and uses therefor

DATE-ISSUED: June 21, 2005

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Wilson; Susan D.	Silver Spring	MD		
White; Wendy	Germantown	MD		
Suzich; JoAnn	Washington Grove	MD		
Mullikin; Brian	Mt. Airy	MD		

US-CL-CURRENT: 424/192.1; 424/204.1, 435/69.1, 435/69.7, 530/300

<a href="#">Full</a>	<a href="#">Title</a>	<a href="#">Citation</a>	<a href="#">Front</a>	<a href="#">Review</a>	<a href="#">Classification</a>	<a href="#">Date</a>	<a href="#">Reference</a>	<a href="#">Sequences</a>	<a href="#">Attachments</a>	<a href="#">Claims</a>	<a href="#">KMC</a>	<a href="#">Draw. D.</a>
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☐ 2. Document ID: US 6713279 B1

L4: Entry 2 of 18

File: USPT

Mar 30, 2004

US-PAT-NO: 6713279

DOCUMENT-IDENTIFIER: US 6713279 B1

TITLE: Non-stochastic generation of genetic vaccines and enzymes

DATE-ISSUED: March 30, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Short; Jay M.	Rancho Santa Fe	CA		

US-CL-CURRENT: 435/69.1; 435/320.1, 435/334, 435/6

<a href="#">Full</a>	<a href="#">Title</a>	<a href="#">Citation</a>	<a href="#">Front</a>	<a href="#">Review</a>	<a href="#">Classification</a>	<a href="#">Date</a>	<a href="#">Reference</a>	<a href="#">Sequences</a>	<a href="#">Attachments</a>	<a href="#">Claims</a>	<a href="#">KMC</a>	<a href="#">Draw. D.</a>
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☐ 3. Document ID: US 6649167 B2

L4: Entry 3 of 18

File: USPT

Nov 18, 2003

US-PAT-NO: 6649167

DOCUMENT-IDENTIFIER: US 6649167 B2

TITLE: Papillomavirus truncated L1 protein and fusion protein constructs

DATE-ISSUED: November 18, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hallek; Michael	Munich			DE
Burger; Alexander	Munich			DE

US-CL-CURRENT: 424/186.1; 424/184.1, 424/204.1, 424/205.1, 435/69.1, 435/69.3,  
536/23.72

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Abstract	Claims	KWIC	Draw. D.
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☐ 4. Document ID: US 6638762 B1

L4: Entry 4 of 18

File: USPT

Oct 28, 2003

US-PAT-NO: 6638762

DOCUMENT-IDENTIFIER: US 6638762 B1

**\*\* See image for Certificate of Correction \*\***

TITLE: Tissue-vectors specific replication and gene expression

DATE-ISSUED: October 28, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Chang; Yung-Nien	Cockeysville	MD		
Hallenbeck; Paul L.	Gaithersburg	MD		
Hay; Carl M.	Damascus	MD		
Stewart; David A.	Eldersburg	MD		

US-CL-CURRENT: 435/325; 424/93.2, 435/320.1, 435/455, 435/69.1, 435/91.4, 514/44

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequence	Abstract	Claims	KWIC	Draw. D.
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☐ 5. Document ID: US 6562351 B2

L4: Entry 5 of 18

File: USPT

May 13, 2003

US-PAT-NO: 6562351

DOCUMENT-IDENTIFIER: US 6562351 B2

**\*\* See image for Certificate of Correction \*\***

TITLE: Papilloma truncated L1 protein and fusion protein constructs

DATE-ISSUED: May 13, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hallek; Michael	Munich			DE
Burger; Alexander	Munich			DE

US-CL-CURRENT: 424/204.1; 424/184.1, 424/186.1, 424/205.1, 435/5, 435/6, 530/300, 536/23.72

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KIMC	Draw D
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☐ 6. Document ID: US 6551597 B1

L4: Entry 6 of 18

File: USPT

Apr 22, 2003

US-PAT-NO: 6551597

DOCUMENT-IDENTIFIER: US 6551597 B1

**\*\* See image for Certificate of Correction \*\***

TITLE: Vaccine compositions for human papillomavirus

DATE-ISSUED: April 22, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Harrison; Stephen	Cambridge	MA		
Chen; Xiaojiang	Denver	CO		

US-CL-CURRENT: 424/204.1; 424/186.1, 424/192.1, 435/69.1, 435/69.3, 536/23.4, 536/23.72

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KIMC	Draw D
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☐ 7. Document ID: US 6551587 B2

L4: Entry 7 of 18

File: USPT

Apr 22, 2003

US-PAT-NO: 6551587

DOCUMENT-IDENTIFIER: US 6551587 B2

TITLE: Vectors for tissue-specific replication

DATE-ISSUED: April 22, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Hallenbeck; Paul L.	Gaithersburg	MD		



Chang; Yung-Nien                      Cockeysville                      MD  
Chiang; Yawen L.                      Potomac                      MD

US-CL-CURRENT: 424/93.2; 435/320.1, 435/455, 435/69.1, 435/91.4, 514/44, 536/24.1

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. D
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☐ 8. Document ID: US 6479258 B1

L4: Entry 8 of 18

File: USPT

Nov 12, 2002

US-PAT-NO: 6479258

DOCUMENT-IDENTIFIER: US 6479258 B1

TITLE: Non-stochastic generation of genetic vaccines

DATE-ISSUED: November 12, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Short; Jay M.	Rancho Santa Fe	CA		

US-CL-CURRENT: 435/69.1; 530/350, 536/23.2

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. D
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☐ 9. Document ID: US 6416945 B1

L4: Entry 9 of 18

File: USPT

Jul 9, 2002

US-PAT-NO: 6416945

DOCUMENT-IDENTIFIER: US 6416945 B1

TITLE: Vitro method for disassembly/reassembly of papillomavirus virus-like particles (VLPS)

DATE-ISSUED: July 9, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
McCarthy; Michael P.	Poolesville	MD		
Suzich; JoAnn	Washington Grove	MD		

US-CL-CURRENT: 435/5; 435/235.1, 435/236, 435/239

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. D
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☐ 10. Document ID: US 6399383 B1

L4: Entry 10 of 18

File: USPT

Jun 4, 2002

US-PAT-NO: 6399383

DOCUMENT-IDENTIFIER: US 6399383 B1

**\*\* See image for Certificate of Correction \*\***

TITLE: Human papilloma virus vectors

DATE-ISSUED: June 4, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Apt; Doris	Sunnyvale	CA		
Khavari; Paul	Stanford	CA		
Stemmer; William P. C	Los Gatos	CA		

US-CL-CURRENT: 435/456; 424/93.1, 424/93.2, 435/235.1, 435/320.1, 435/325, 514/44, 536/23.1

Full	Title	Citation	Front	Review	Classification	Date	Reference			Claims	KWC	Draw. D
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Documents

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18

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[Previous Page](#)[Next Page](#)[Go to Doc#](#)

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<input type="checkbox"/>	L3	papillomavirus and capsomere	50
<input type="checkbox"/>	L2	Gissmann Lutz.in.	13
<input type="checkbox"/>	L1	6228368	4

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Clear	Generate Collection	Print	Fwd Refs	Bkwd Refs
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Search Results - Record(s) 1 through 10 of 13 returned.

☐ 1. Document ID: US 6723317 B2

L2: Entry 1 of 13

File: USPT

Apr 20, 2004

US-PAT-NO: 6723317

DOCUMENT-IDENTIFIER: US 6723317 B2

TITLE: Antibodies specific for seroreactive regions on HPV 16 protein E1

DATE-ISSUED: April 20, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Muller; Martin	Heidelberg			DE
Gissmann; Lutz	Wiesloch			DE

US-CL-CURRENT: [424/130.1](#); [424/186.1](#), [424/204.1](#), [435/345](#), [435/7.9](#), [530/300](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Abstracts	Abstracts	Claims	KMC	Draw D
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☐ 2. Document ID: US 6599508 B1

L2: Entry 2 of 13

File: USPT

Jul 29, 2003

US-PAT-NO: 6599508

DOCUMENT-IDENTIFIER: US 6599508 B1

**\*\* See image for [Certificate of Correction](#) \*\***

TITLE: Papilloma virus-like particles, fusion proteins as well as processes for their production

DATE-ISSUED: July 29, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Gissmann; Lutz	Willowbrook	IL		
Zhou; Jian	Willowbrook	IL		
Muller; Martin	Chicago	IL		
Painstil; Jeanette	Westchester	IL		

US-CL-CURRENT: [424/204.1](#); [424/184.1](#), [424/186.1](#), [424/205.1](#), [435/69.1](#), [435/69.3](#), [536/23.72](#)

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. D.
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☐ 3. Document ID: US 6531127 B2

L2: Entry 3 of 13

File: USPT

Mar 11, 2003

US-PAT-NO: 6531127

DOCUMENT-IDENTIFIER: US 6531127 B2

TITLE: Antibodies that specifically react with seroreactive regions on HPV 16 proteins E1 and E2

DATE-ISSUED: March 11, 2003

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Muller; Martin	Heidelberg			DE
Gissmann; Lutz	Wiesloch			DE

US-CL-CURRENT: 424/130.1; 424/147.1, 424/159.1, 424/186.1, 424/204.1, 435/345,  
435/5, 435/7.9, 435/7.91, 530/300

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. D.
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☐ 4. Document ID: US 6361778 B1

L2: Entry 4 of 13

File: USPT

Mar 26, 2002

US-PAT-NO: 6361778

DOCUMENT-IDENTIFIER: US 6361778 B1

TITLE: Carboxyl terminal of papillomavirus L1 region is not required for formation of virus-like particles

DATE-ISSUED: March 26, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Gissmann; Lutz	Willowbrook	IL	60514	
Zhou; Jian	Willowbrook	IL	60514	
Muller; Martin	Chicago	IL	60622	
Painstil; Jeanette	Westchester	IL	60154	

US-CL-CURRENT: 424/204.1; 424/184.1, 424/186.1, 424/205.1, 435/69.1, 435/69.3,  
536/23.72

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KWIC	Draw. D.
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